that it seems somewhat unnatural to separate diatoms and desmids so widely. The third group contains *Schizophyta*, while the fourth and fifth are *Algæ* and *Fungi*. The last two groups seem to show the widest departure from the original presentation of these plants. The teaching that the presence or absence of chlorophyll makes no special difference in the presence of morphological resemblances has been widely taught. However, the present use of these terms has not been absolutely restricted by the former distinction between algæ and fungi, and so morphological resemblance has not been slighted. The group *Algæ* is made to contain three sub-divisions, viz., *Chlorophyceæ*, *Phæophyceæ*, and *Rhodophyceæ*, or green, brown, and red seaweeds. *Fungi* contains six sub-divisions, viz., *Chytrideæ*, *Ustilagineæ*, *Phycomycetes*, *Ascomycetes*, *Uredineæ*, and *Basidiomycetes*. The second great group, MUSCINEÆ, comprises *Hepaticæ* and *Musci*. The third group, VASCULAR CRYPTOGAMS, contains *Filicineæ*, *Equisetineæ*, *Sphenophylleæ* (a fossil group), and *Lycopodineæ*. The grouping of SEED PLANTS is that which has been long familiar to botanists. Not the least valuable part of the book is the appended "Explanation of terms." Altogether, this work is the most valuable recent contribution in the English language to the classification and morphology of plants.

NOTES AND NEWS.

PROF. AND MRS C. S. SARGENT have gone to Mexico, via Key West and Galveston.

DR. ASA GRAY and wife sailed for Europe April 7. The Doctor goes chiefly to visit the Lamarck herbarium.

DR. C. S. SARGENT reports that 70,000 trees and shrubs have been planted at the Arnold Arboretum during the last year.

COOKE'S HANDBOOK of British Fungi, 2d edition, being issued as a supplement to *Grevillea*, has now reached page 192, and species 709 in the genus Agaricus.

DR. GRAY'S new book, to take the place of "How plants grow" and the "Lessons," which have done such yeoman service, is about ready for the press.

A. P. MORGAN gives descriptions and an analytical key to the species, twenty-four in number, of the North American Amanitas of the genus Agaricus, in the March *Journal of Mycology*.

THE *Gardener's Monthly* says that Dr. Rothrock has been compelled to take a year's vacation on account of his health. He will go south, spending the summer among the mountains.

THE WILMINGTON FLORA, by Thomas F. Wood and Gerald McCarthy, already noticed in this journal, has been distributed separately as a reprint from the Journal of the Elisha Mitchell Scientific Society of N. Carolina.

THOMAS HOWELL, of Arthur, Oregon, has just distributed a catalogue of the Phanerogams and Pteridophytes of Oregon, Washington, and Idaho. Mr. Howell is a well-known collector, and his catalogue is thoroughly reliable.

DR. LORENZO G. YATES (Santa Barbara, Cal.) has distributed his list, with notes, of the ferns of Ceylon. The catalogue contains extracts from manuscript notes of Dr. Thwaites, and the published works of Hooker, Baker, and Wall.

THE *Bulletin* of the Washburn College (Topeka, Kan.) laboratory of Natural History is an excellent publication, devoted to the natural history of the state. Its various numbers contain much information concerning the flora of Kansas, especially the cryptogamic flora.

PROF. W. R. DUDLEY, of Cornell University, will start in a few months for a year's study and travel in Europe. Cornell has the admirable regulation that a professor may take one year in seven, with half salary, for going abroad. Professor Dudley has taught in the University ten years, and well merits this opportunity for relaxation.

THE *Pharmaceutical Era* is a monthly periodical, begun with the year, and among other departments has one devoted to botany. under the charge of Charles F. Wheeler. Mr. Wheeler is well known as one of the authors of the Catalogue of Michigan Plants. The new periodical is edited by Dr. A. B. Lyons, is published at Detroit, and costs $1.50 a year.

WE REGRET to announce the death of Dr. Eichler, of the University of Berlin, and Director of the Botanic Garden, where he succeeded Alexander Braun. Through his editorship of the *Flora Brasiliensis*, succeeding von Martius, his researches among Coniferæ and other orders, and his *Blüthendiagramme*, he is one of the most widely known of our botanists.

HORTICULTURAL NOMENCLATURE is the subject of an article by Prof. L. H. Bailey, Jr., in *Agricultural Science* for March, in which he advises the use of English for the part of the name referring to the cultural condition, or, if Latin must be used, to separate the parts of the name denoting the cultural and natural condition of the plant by a comma, or the abbreviation "hort.," but not by "var."

PART III. (Oct.–Dec., 1886) of the Proc. Philad. Acad. contains several articles of botanical interest, as follows: History and biology of pear-blight (conclusion), J. C. Arthur; Notes on the lichens in the herbarium of the Academy, J. W. Eckfeldt; On the interdependence of plants, and Petiolar glands in some Onagraceæ, Thomas Meehan; On hæmatoxylin in the bark of Saraca Indica, Miss H. C. De S. Abbott.

IT WAS a happy and fruitful thought which led B. A. Elliott & Co., of Pittsburg, to attract the attention of the public to the stock in which they deal by issuing the handsome work on "A few flowers worthy of general culture." It is a small quarto, profusely illustrated with artistic engravings, and with an interesting text quite free of shoppy flavor, advocating the use of hardy plants for the lawn and garden, including native sorts.

IN THE *Torrey Bulletin* for March, Arthur Hollick and N. L. Britton give an account of *Cerastium arvense* L. and its North American varieties, accompanied by three plates, one of them colored. Some six varieties are described, two of which are new, and one of these is C. oblongifolium of the Manual. A full synonymy and bibliography are given. In the same number Mr. Thomas Morong describes a new Eryngium from Louisiana.

IN *Science* for March 11, Mr. B. E. Fernow enters his protest against the sweeping judgment of Professor Sargent condemning foreign trees. He calls attention to the facts that forestry and arboriculture are not the same thing, and that New England is not all of the United States. With forest conditions and in other regions of our great domain Mr. Fernow claims that it remains to be seen whether the cultivation of foreign trees will be profitable.

THE HISTORY of the currant is treated by Dr. E. L. Sturtevant in the Proceedings of the N. Y. Hort. Society for 1887. The author traces it among the early horticultural writers, especially the pre-Linnæan herbalists, it being first mentioned by Ruellius in 1536. His conclusion is that "the currant fruit has not changed at all in type under culture, but has furnished variety characteristics in increased size, diminished seed and improved quality."

IN THE *Journal of Botany* for March, B. Daydon Jackson gives an interesting account of the preparation of the new "Index of plant-names," a work of tremendous labor and of equal importance. Some idea of its magnitude may be estimated from the statement that "rather more than 30,000 covers were required for the genera, and the whole of the MS. is accommodated in 178 boxes, housed in two sets of pigeon-holes; the entire MS. is computed to weigh rather more than a ton."

NOTES ON microscopical methods for the use of students in Cornell University, prepared by Prof. S. H. Gage, cover the requirements of general microscopical instruction in a thorough and serviceable manner. The work, illustrated with nearly a dozen lithographic diagrams, is an ample introduction to the use of the microscope and its accompaniments for students in either animal or vegetable histology. It is intended by the author to be used with his notes on histological methods, published a year ago.

THE SUMMER SCHOOL of Harvard University will be held at the Botanic Garden, Cambridge, Mass., beginning Wednesday, July 6th, and ending Saturday, August 6th. The course has been planned with reference to the needs of teachers, and will include laboratory work in the morphology of phanerogams and cryptogams, under the direction of Mr. James E. Humphrey. Professor Goodale will lecture on the morphology and physiology of phanerogams, and Mr. Humphrey on the morphology and classification of cryptogams.

THE *American Naturalist*, though long delayed, makes its appearance doubly welcome by an entirely new dress. It is to be congratulated upon its improved appearance. The botanical articles are "Parasitic bacteria and their relation to Saprophytes," by Theobald Smith, and "History of garden vegetables," by E. L. Sturtevant. In the botanical department we find "Pollen-tubes of Lobelia," "The tree-trunk and its branches," "The article 'Schizomycetes' in the Encyclopædia Britannica," and an account of the various botanical journals.

THE December number of the *Journal of the New York Micros. Society*, received the middle of March, closes the second volume. The journal barely maintains the promise of its beginning. The leading articles of the present number are singularly elementary in tone, as if addressed to amateurs. It is accompanied by a supplemental number devoted to experiments in raising diatoms in the laboratory, by Rev. Samuel Lockwood. This is one of the most valuable articles yet published, and recounts the tests by which it was proven that several species of diatoms could be grown from minute resting spores after the lapse of fourteen to sixteen years.

DR. GRAY'S opinion regarding the capitalization of plant names was recently secured by a correspondent of the *American Florist*, and the following extract from it may be of interest to botanists: "No botanist writing in the English or Latin language would ever write the name of a genus, say Rosa or Begonia, without a capital initial letter. But if any one is writing generally about roses, or begonias, or phloxes, or such

names, which you use as English plurals, it is simply a matter of taste and usage whether to use a capital or small initial. There is a strong tendency to the latter, and I see no harm in it. I do not fall into that custom in my books, partly for this reason: When I write Strawberry, Flax and Wheat, I mean the plant so called; and when I write strawberry, flax or wheat, I refer to the fruit, fibre or grain, and when I write rose I mean the flower, not the plant. This I find convenient and useful; but the common usage seems to me perfectly proper."

THE GOVERNMENT appropriation for the fiscal year ending June 30, 1888, to support the botanical part of the Department of Agriculture, is $15,440. Of this sum $9,400 goes to the Section of Plant Pathology (as the *Section of Mycology* is henceforth to be known), and $6,040 to the remainder of the Division of Botany. The appropriation for the present fiscal year was $8,200, inclusive of the mycological part, and for the preceding year, $3,000. If memory is not at fault, earlier annual appropriations never exceeded the last figure. Those who know about the expenditure of this money, know that good use is made of it, and feel gratified at the evidences of increasing usefulness.

A RECENT WORK on British Fungi by W. D. Hay, called an elementary text-book, proves, upon examination, to be neither elementary nor a text-book in any proper sense, but a semi-popular treatise on edible fungi. Whoever essays to use it, however, should first be master of the subject in order to check the author, whose statements are frequently not above criticism. One is prepared for this upon finding that the author acknowledges no help, and says that he has "never met with any person versed in mycology." The source of the fifty-nine plates, forty-four of which have no connection with the text, is not divulged, but any one familiar with the works of the more prominent mycological writers could guess closely. It seems probable that the publishers, a good firm, have been caught napping.

IN A RECENT meeting (Jan. 20) of the Linnean Society, Mr. J. R. Vaizey read a paper on the morphology of the sporophore in mosses. The "central strand," surrounded by a single layer of cells is composed, as is well known, of an outer cylinder of elongated cells with somewhat thickened walls and a central region of smaller thin-walled cells. The former Mr. Vaizey calls *prophloem*, the latter, being conductive of water, *proxylem*. This proxylem only differs from the xylem of vascular plants "in the absence of spiral thickening and lignification of the cells." "The prophloem differs still less from phloem," though no sieve tissue has been discovered; but this is lacking in some vascular plants. The conclusion drawn is that mosses and vascular plants have descended from a common ancestor, similar to the Anthocerathæ.

AT A MEETING of the Linnean Society of London, January 20, 1887, a paper was read by Francis Darwin and A. Bateson upon "The effects of stimulation on turgescence in vegetable tissues." The important results announced are summarized as follows by the *Journal of Botany*: (1) Turgescent pith placed in water increases in length, at first slowly, then more quickly, and then again the rate of increase becomes slow; (2) the rate of increase in length increases as the temperature of the water rises, reaches an optimum, and suddenly falls as a temperature sufficient to cause flaccidity is reached; (3) the following reagents cause distinct acceleration, *viz.*, alcohol, ether, ammonia and hydrocyanic acid; the first three a very temporary effect, whereas prussic acid has a prolonged action; (4)

the following reagents produce retardation, *viz.*, acetic acid, hydrochloric acid and probably nitric acid; (5) dilute solutions of quinine, of quinine chlorate, and carbolic acid produce a remarkably rapid shortening of the pith.

DR. A. GATTINGER has just distributed copies of the "The Tennessee Flora," containing the Phanerogams and Pteridophytes of that state, with special reference to the Flora of Nashville. There are few regions more interesting, botanically, than Tennessee, and no botanist more competent to write of its flora than Dr. Gattinger. The summary shows the list to number 1,708 species and varieties. Several new species have been recently described from Tennessee, discovered by Dr. Gattinger, as for example, two Leavenworthias, a Hypericum, a Silphium, a Solidago, etc. An unfortunate oversight is that some of these new species appear as if described in this catalogue for the first time, when the original descriptions have been previously published elsewhere. For instance, Hypericum lobocarpum and Silphium brachiatum were both originally published in the BOTANICAL GAZETTE, but there is nothing to indicate it in the catalogue, where they are described as new species. The catalogue will be welcomed by botanists as containing the first full record of the plants of a very rich flora.

THE CONTRIBUTIONS of Dr. Asa Gray to the Proceedings of the American Academy of Arts and Sciences embrace a very large number of original descriptions of American plants and critical notes on the same, with which every systematic botanist desires to be acquainted, and to such the following list will prove serviceable. This does not include papers published in the memoirs of the society, which are alluded to in the Proceedings, or of remarks reported by the secretary. The two papers of 1860 are abstracts of observations on natural selection, about which much discussion arose in the Academy at the time, and are not strictly botanical. The articles began to be called *Contributions* with volume ix. As stated in a previous issue, the author, upon solicitation, has consented to place some of the remaining numbers in the hands of the Curator of the Harvard Herbarium, from whom they can be obtained at thirty-five cents each.

Vol. I.
46–50 (1846)
Vol. II.
159–160 (1849)
323–325 (1852)
Vol. III.
34 (1853)
48–54 (1853)
94–97 (1854)
127–129 (1854)
258 (1856)
Vol. IV.
2–3 (1857)
33–50 (1858)
98–99 (1858)
306–318 (1859)
319–324 (1859)
326–327 (1859)
411–415 (1860)
424–426 (1860)
Vol. V.
114–191 (1861)
314–352 (1861)
Vol. VI.
37–80 (1862)
182–236 (1863)
519–556 (1865)
Vol. VII.
327–401 (1867)
Vol. VIII.
145–200 (1870)
243–296 (1870)
365–412 (1872)
620–661 (1873)
Vol. IX.
187–218 (1874)
Vol. X.
39–78 (1874)
312–332 (1875)
Vol. XI.
71–104 (1875)
Vol XII.
51–84 (1876)
159–165 (1877)
Vol. XIII.
361–374 (1878)
Vol. XV.
25–52 (1879)
Vol. XVI.
78–108 (1880)
Vol. XVII.
163–230 (1882)
Vol. XIX.
1–96 (1883)
Vol. XX.
1–12 (1884)
257–310 (1884)
Vol. XXI.
363–413 (1886)
Vol. XXII.
270–314 (1886)